

FD-10A

SERVICE MANUAL

US Model




SPECIFICATIONS

TV standard	American TV standard
Channel coverage	VHF channels 2-13 UHF channels 14-69
Antenna	VHF/UHF telescopic antenna
Picture tube	2-inch picture measured diagonally
Output	EAR: minijack, impedance 8-300ohms
Battery life	

Battery		Life (hrs.)
Size AA	Sony New Super SUM-3 (NS)	approx. 1.5
L40	Eveready alkaline E91	approx. 5

Power requirement	6V DC
Power consumption	1.6W
Dimensions	Approx. 64.3 x 156.6 x 41.5mm(w/h/d) (2 ⁵ / ₈ x 6 ¹ / ₄ x 1 ¹ / ₁₆ inches) incl. projecting parts and controls
Weight	Approx. 410g (14.5oz) incl. batteries

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.



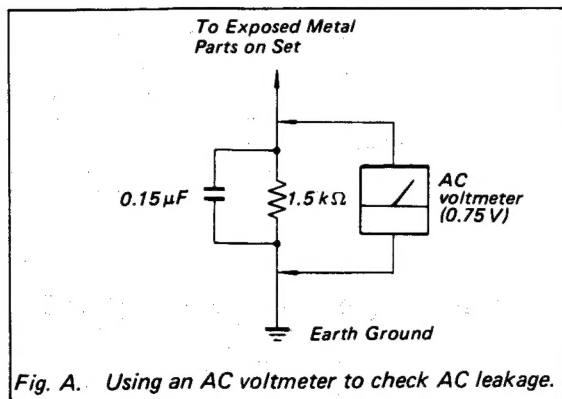
FLAT BLACK AND WHITE TV
SONY®



SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.



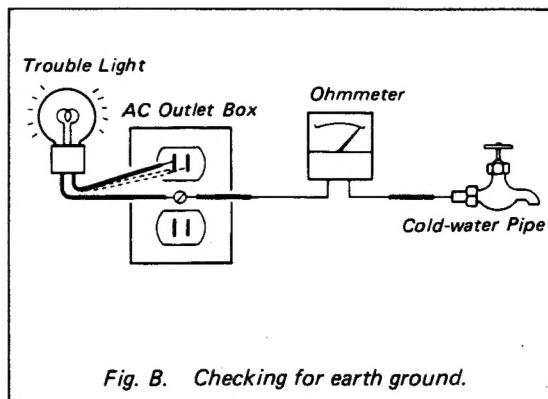
LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)



Replacing chip components

All chip components should be connected and disconnected, using a tapered soldering iron [temperature of the iron tip: less than 280°C (536°F)], a pair of tweezers and braided wire.

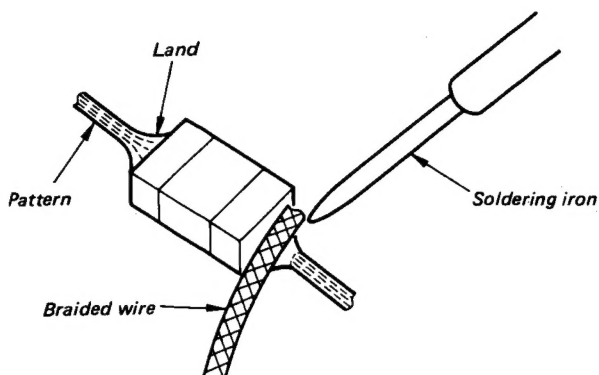
Precautions for replacement

1. Do not disconnect the chip component forcefully. Otherwise, the pattern may peel off.
2. Never re-use a disconnected chip component. Dispose of all old chip components.
3. To protect the chip component, heating time for attaching the component should be within 3 seconds.

○ Removing chip components

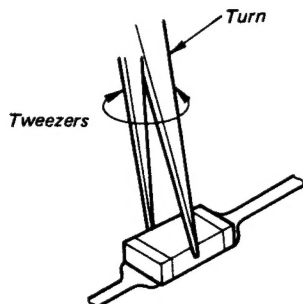
(1) Removing solder at electrode

Remove the solder at the electrode, using a thin braided wire. Do not remove the solder of the part (chip component) attached adjacent to the electrode.



(2) Disconnecting chip components

Turn the tweezers with the soldering iron alternately applied to both electrodes, and the chip component will be disconnected. Take careful precautions while disconnecting, because if the chip component is forcefully removed the land may peel off. Never re-use a disconnected chip component.



(3) Smoothing the soldered surface

After disconnecting the chip component, remove the solder by using a braided wire to smooth the land surface.

○ Connecting chip components

The value of chip components is not displayed on the main body. Take due precautions to avoid mixing new chip components with other ones.

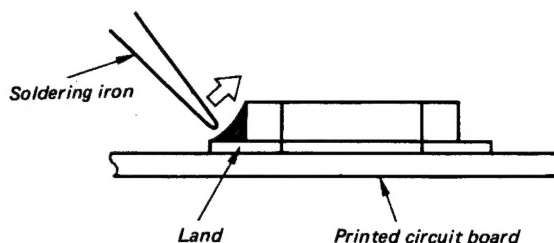
(1) Applying solder to land on one side

Apply a thin layer of solder to the land on one side where the chip component is to be connected. Too much solder may cause bridging.



(2) Speedy soldering

Hold the chip component at the desired position, using tweezers, and apply the soldering iron in the arrow-marked direction. To protect the chip component, heating time should be within 3 seconds.



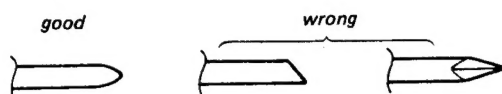
(3) Speedy soldering of electrode on the other side

Solder the electrode on the other side in the same way as in (2) above.

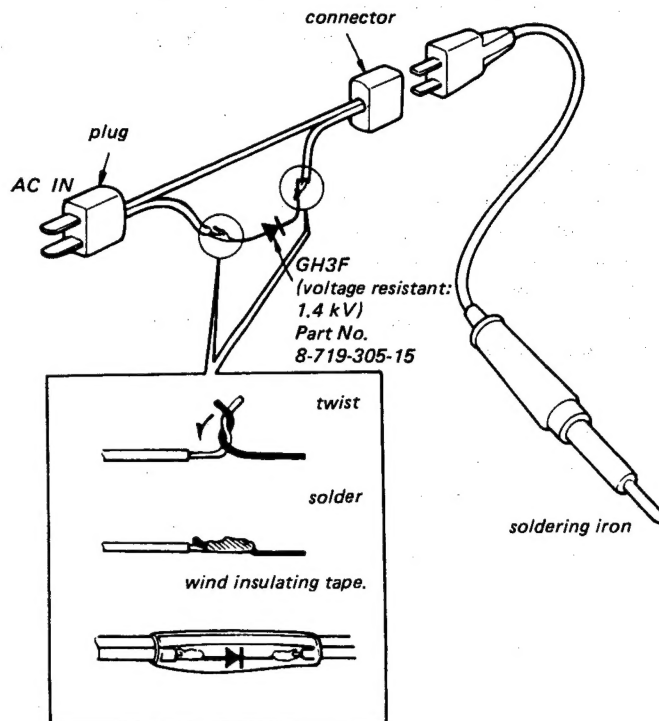
Flexible Circuit Board Repairing

1. Keep the temperature of the soldering iron at $270^{\circ} \pm 10^{\circ}\text{C}$ during repairing.
You can maintain the temperature of the soldering iron around 270°C by using the thermal controller as illustrated on the right.
2. Do not touch the soldering iron more than 4 seconds or 3 times on the same conductor of the circuit board.
3. Do not apply force on the conductor when soldering or unsoldering.

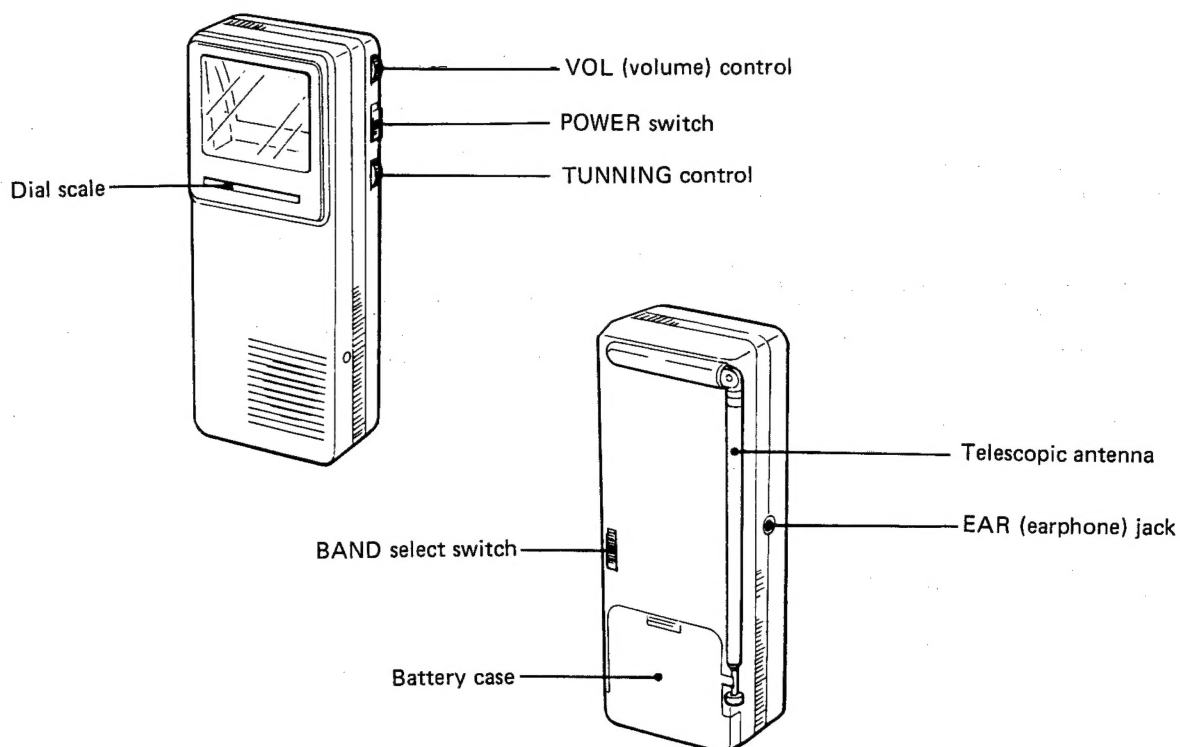
Tip of soldering iron



To make thermal controller of soldering iron



PARTS IDENTIFICATION

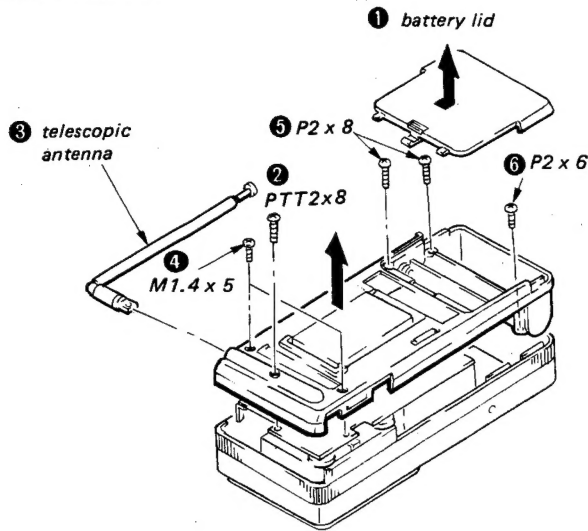




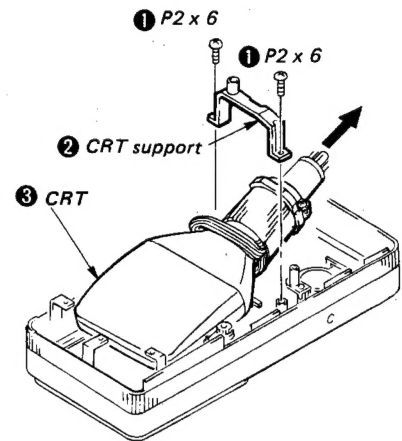
SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in numerical order given.

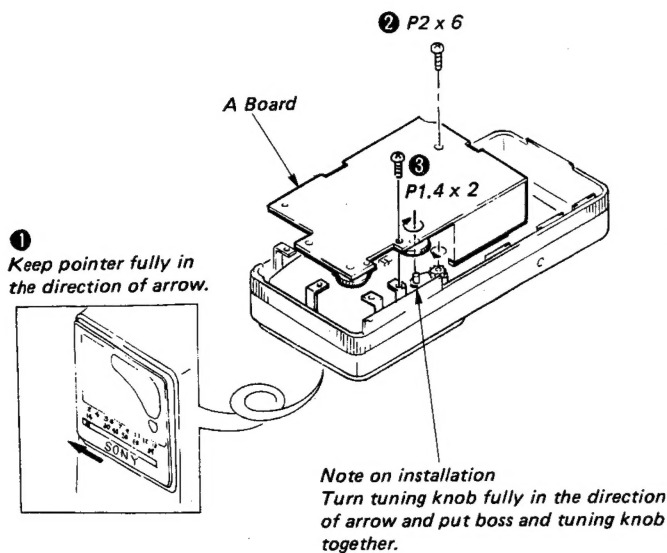
REAR CABINET



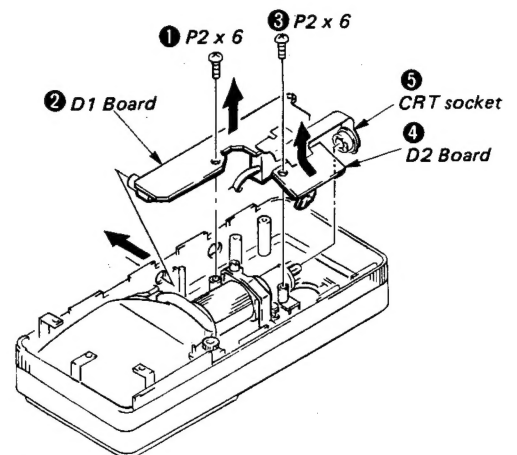
CRT



A BOARD



D1 BOARD, D2 BOARD



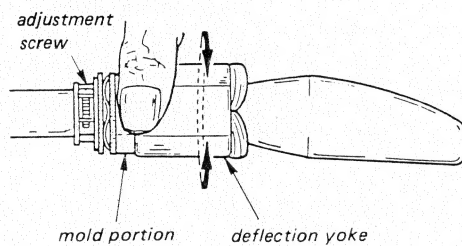
SECTION 3 ADJUSTMENTS

1. Test Equipment Required
 - regulated power supply
 - color-bar/pattern generator
 - digital voltmeter
2. Input Signal
a cross-hatch, a color-bar or an off-air signal.
3. These adjustment should be performed with 6V dc unless otherwise noted.

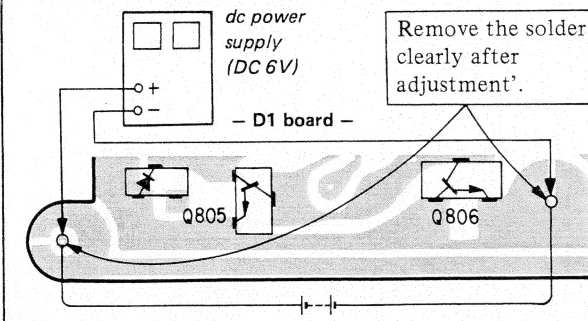
Horizontal Alignment Adjustment

1. Loosen the adjustment screw.
2. Tune in an off-air signal and adjust deflection yoke for optimum picture.
3. Tighten the screw after the adjustment.

Note: When making the adjustment, turn the deflection yoke while holding the mold portion together with yoke.

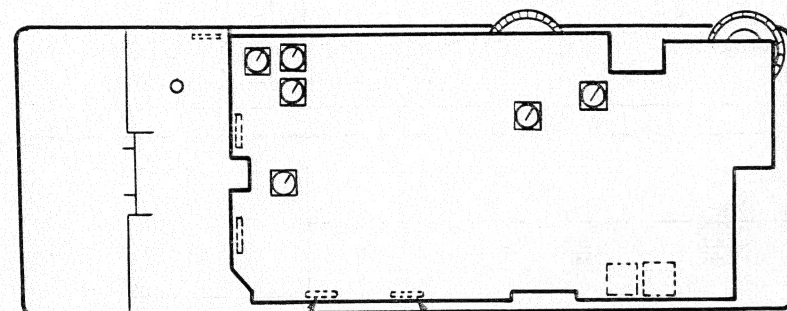
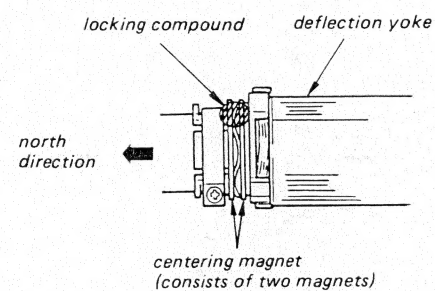


Power Supply Voltage Input Point



Centering Adjustment

1. Turn the socket of CRT toward the north.
2. Tune in an off-air signal.
3. Adjust the centering magnet so that the picture is in the center.



Horizontal Frequency Adjustment

1. Connect terminal ⑬ of IC501 to ground.
2. Tune in an off-air signal and adjust RV501 for stable picture.

4.7V Adjustment

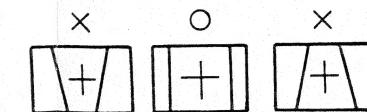
Adjust RV601 for 4.7V reading on collector of Q601.

Focus Adjustment

1. Set the regulated dc power supply voltage to 4.5V.
2. Adjust RV801 for the best focus at the center of the picture.

Keystone Correction (KEYST) Adjustment

1. Tune in an off-air signal.
2. Adjust RV851 for optimum picture.

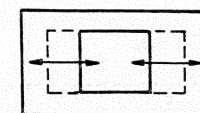


RF AGC Adjustment

1. Tune in an off-air signal.
2. Adjust RV201 so that snow noise disappears from the picture.

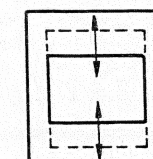
Horizontal Amplitude (H-SIZE) Adjustment

1. Tune in an off-air signal.
2. Adjust RV852 for the best horizontal amplitude.



Vertical Amplitude (V.SIZE) Adjustment

1. Tune in an off-air signal.
2. Adjust RV502 for the best vertical amplitude.



Ch

- 1.
- 2.
- 3.
- 4.
- 5.

Lu

- 1.
- 2.

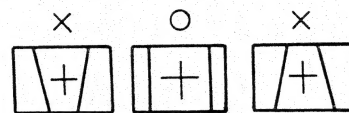
Focus Adjustment

1. Set the regulated dc power supply voltage to 4.5V.
2. Adjust RV801 for the best focus at the center of the picture.

RV801

Keystone Correction (KEYST) Adjustment

1. Tune in an off-air signal.
2. Adjust RV851 for optimum picture.

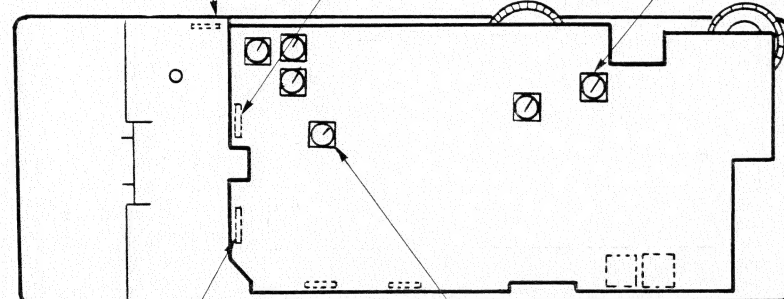


RV851

RF AGC Adjustment

1. Tune in an off-air signal.
2. Adjust RV201 so that snow noise disappears from the picture.

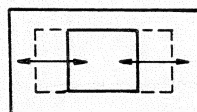
RV201



RV852

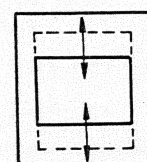
Horizontal Amplitude (H-SIZE) Adjustment

1. Tune in an off-air signal.
2. Adjust RV852 for the best horizontal amplitude.



Vertical Amplitude (V.SIZE) Adjustment

1. Tune in an off-air signal.
2. Adjust RV502 for the best vertical amplitude.

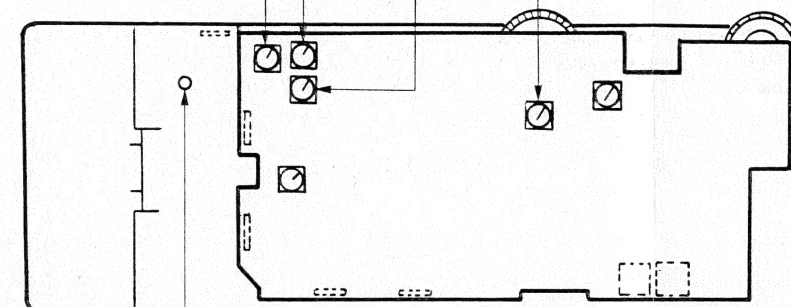


Channel Display Adjustment

1. Set the BAND switch to VHF.
2. Turn the TUNING knob, set the dial pointer to the number "6" on dial scale.
3. Adjust RV154 for the best focus at the center of the picture.
4. Turn the Tuning knob, set the dial pointer to the number "7" on dial scale.
5. Adjust RV155 for the best focus at the center of the picture.

6. Set the dial pointer to the number "13" on dial the picture.
7. Adjust RV153 for the best focus at the center of picture.
8. Set the BAND switch to UHF and set the dial pointer to the number "69" on dial scale.
9. Adjust RV152 for the best focus at the center of the picture.

RV153 RV152 RV154 RV155



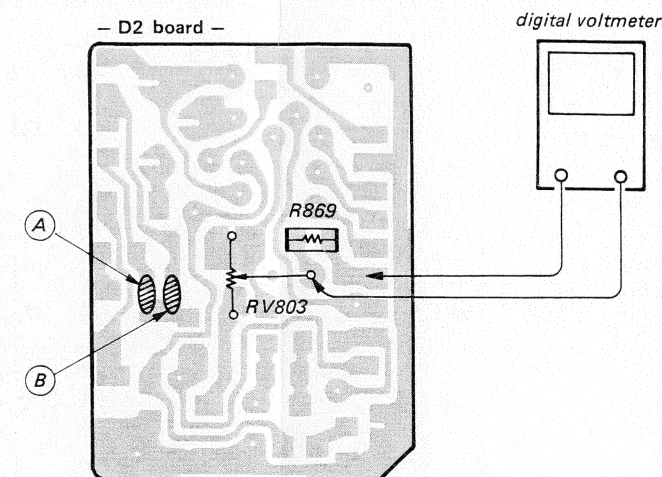
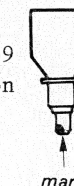
RV803

Luminance (BRT) Adjustment

1. Bridge the pattern as shown at right according to the mark on the neck of the picture tube.

	(A)	(B)
no mark	open	bridge
red mark	bridge	open

2. Connect a digital voltmeter across R869 and adjust RV803 for 24.6V reading on digital voltmeter.



SECTION 4
DIAGRAMS

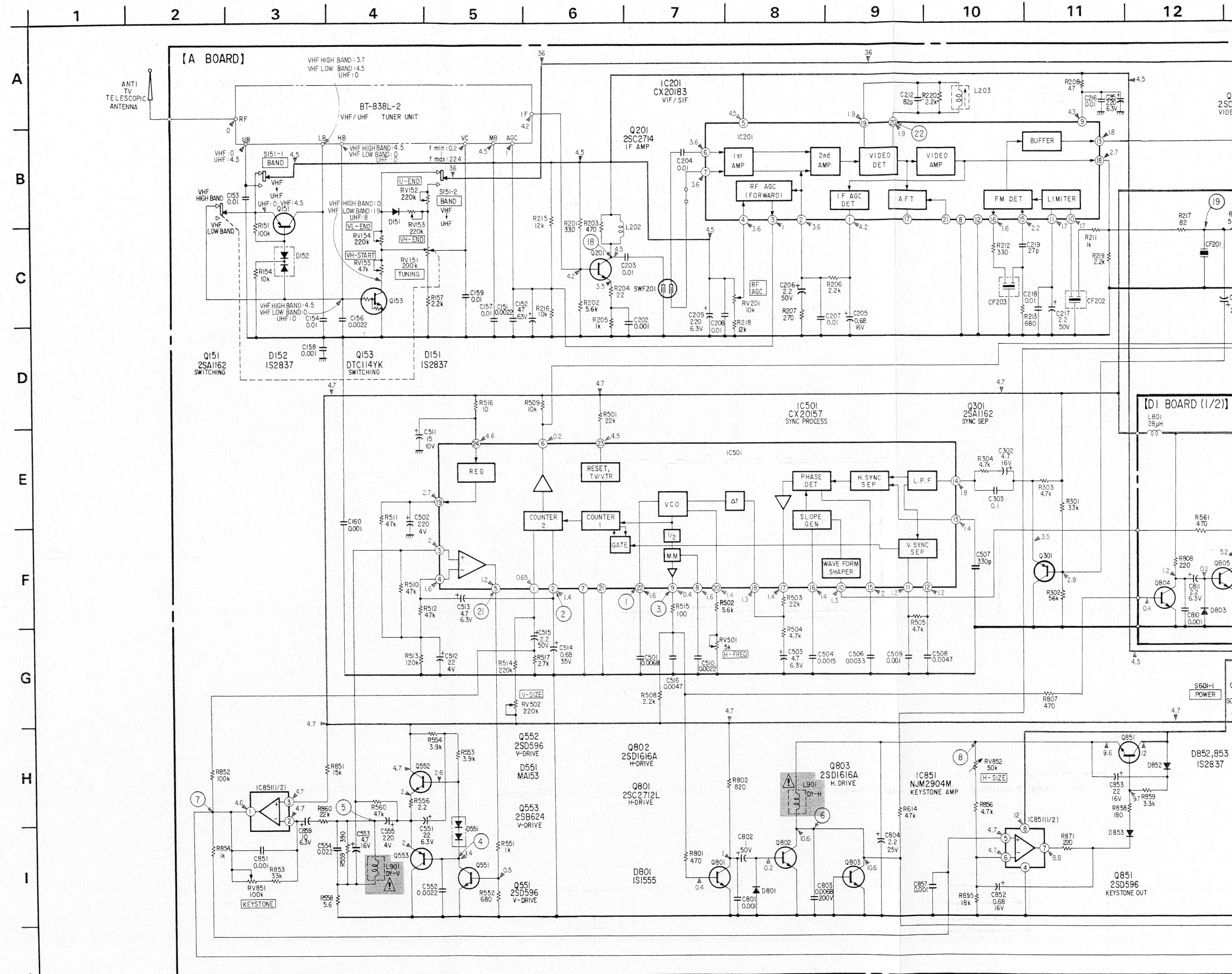
4-1. SCHEMATIC DIAGRAM

Note:

- All capacitors are in μF unless otherwise noted. pF: μF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- Δ : internal component.
- --- : B+ bus.
- \square : adjustment for repair.
- Power voltage is DC 6V and fed with regulated dc power supply from DC IN 6V (external power) jack. Reading are taken under no-signal (detuned) conditions with a VOM (50k Ω /V)
- Waveforms are taken under no-signal conditions by using oscilloscope. Reading are taken with a color-bar signal input.
- Total current is measured under no-signal conditions.
- Switch

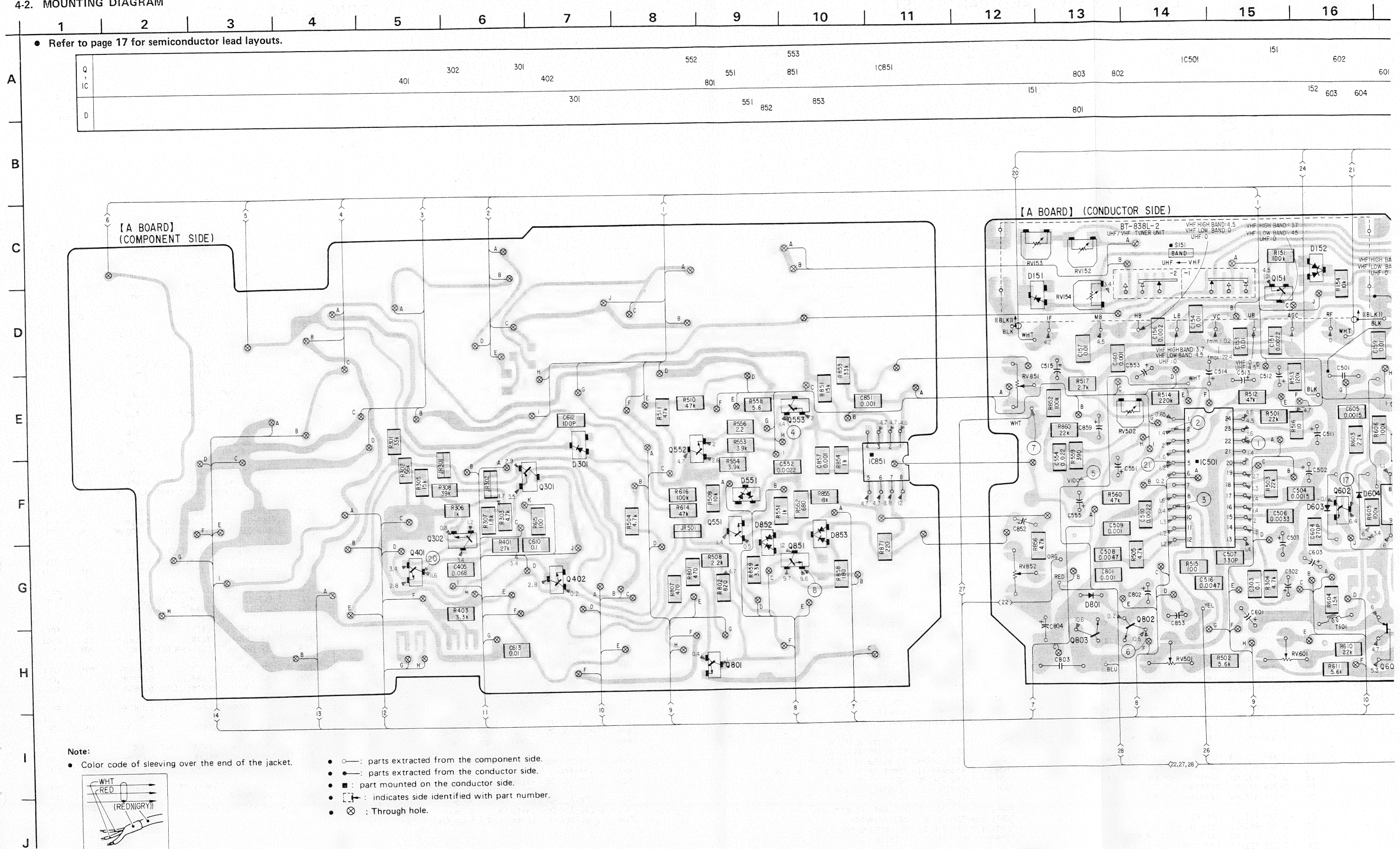
Ref. No.	Switch	Position
S151	BAND	VHF
S601	POWER	OFF

Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

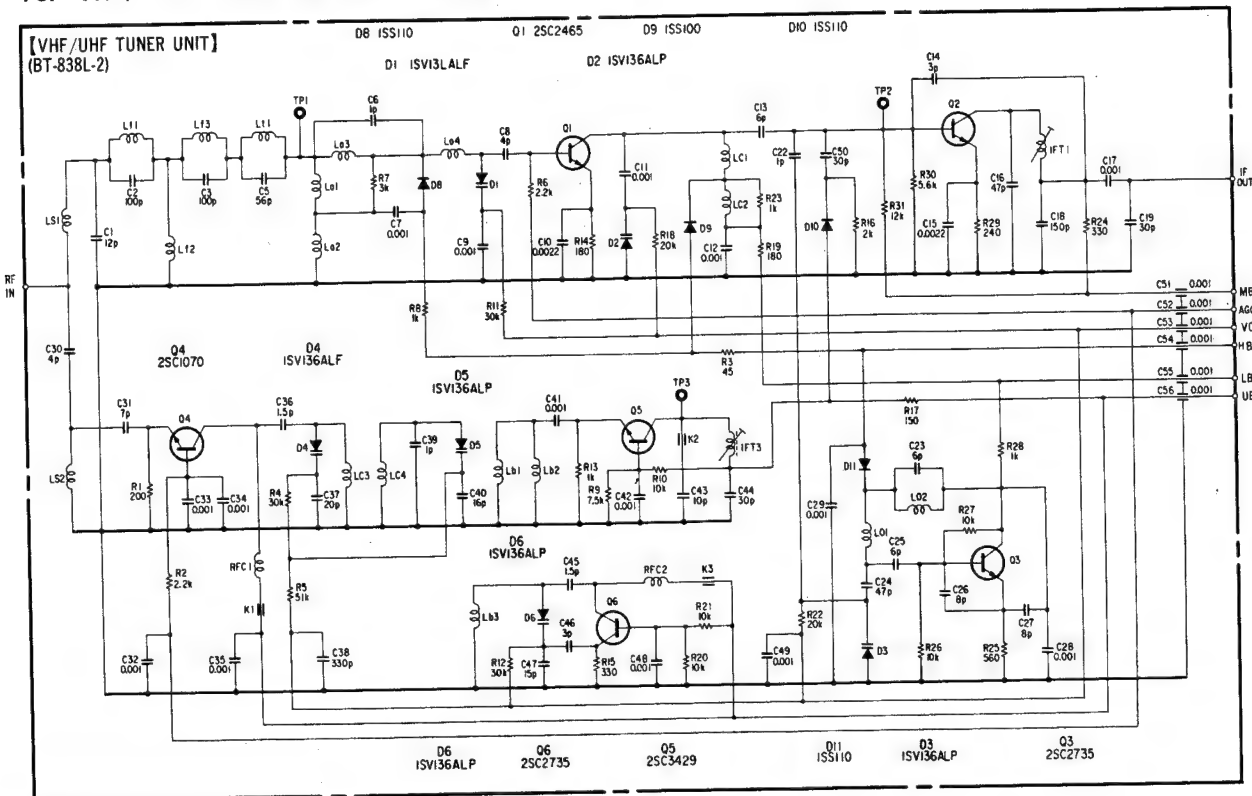


4-2. MOUNTING DIAGRAM

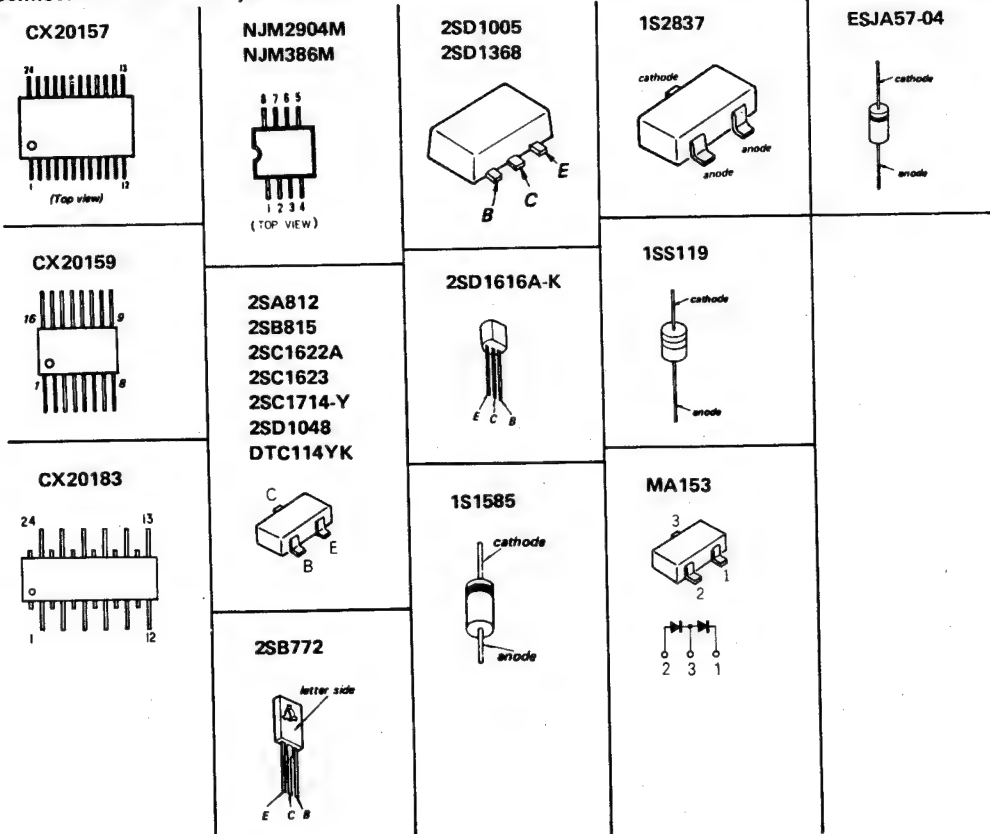
- Refer to page 17 for semiconductor lead layouts.



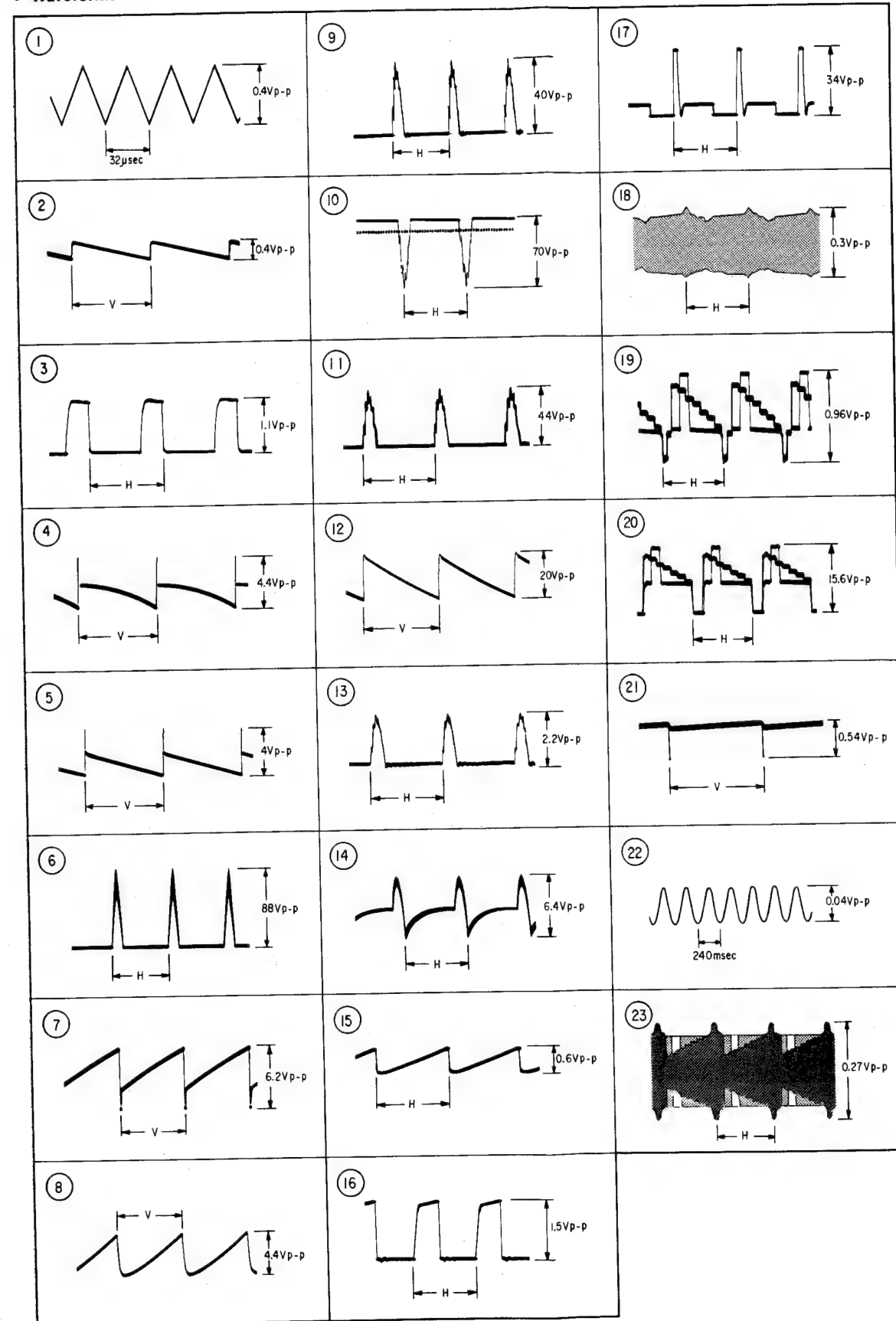
4-3. VHF/UHF TUNER UNIT SCHEMATIC DIAGRAM

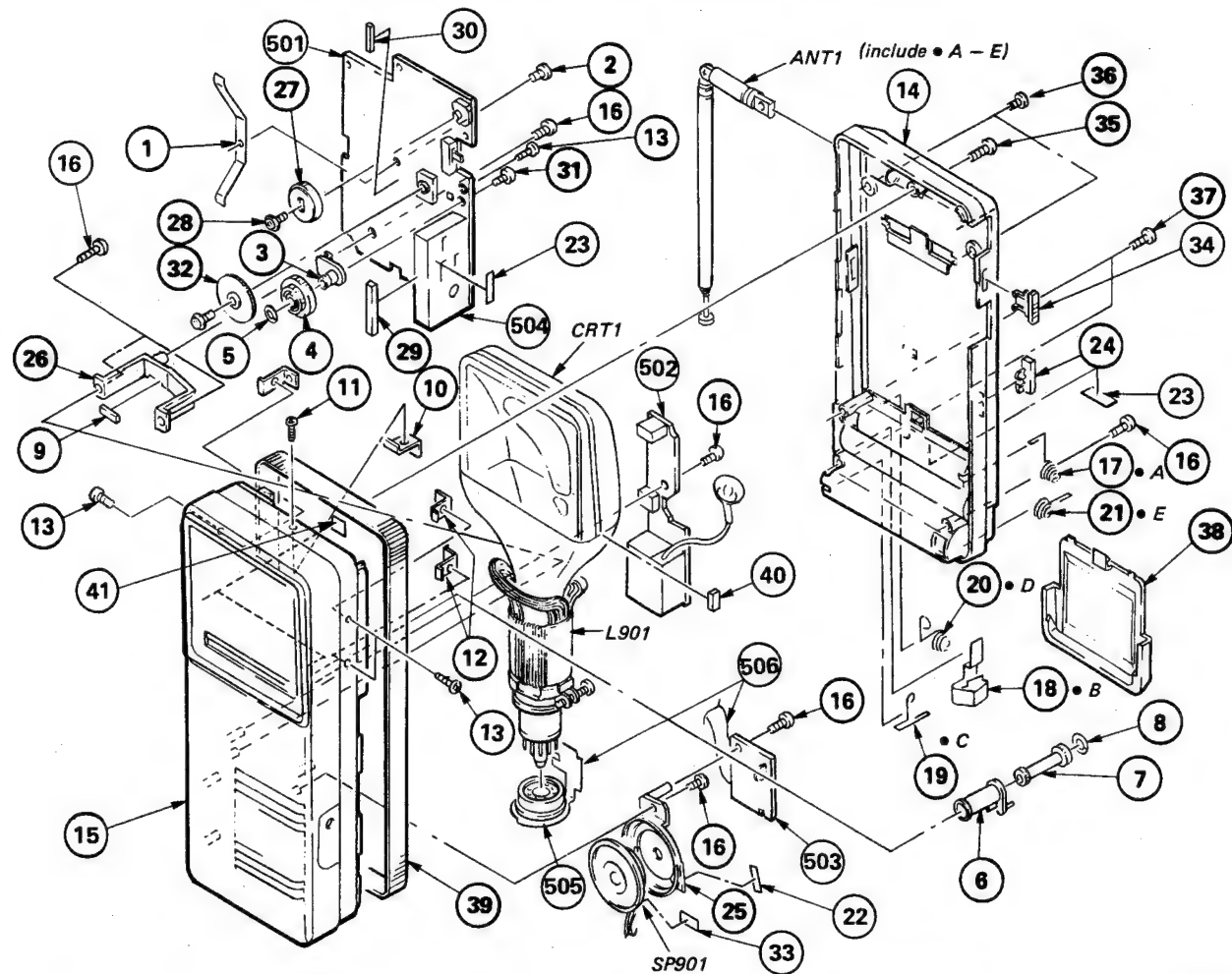


- **Semiconductor Lead Layouts**



- **Waveforms**



SECTION 5
EXPLODED VIEW AND PARTS LIST

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	*3-329-414-01	PLATE, CONTACT, GROUND		25	*3-329-430-01	HOLDER, SP	
2	3-703-502-21	SCREW		26	*3-329-404-01	SUPPORT, CRT	
3	3-329-424-01	TUNING BLOCK		27	3-329-428-01	KNOB, VOLUME	
4	3-329-427-01	KNOB, TUNING		28	3-703-502-41	SCREW	
5	3-329-411-01	WASHER, STOPPER		29	9-911-815-01	CUSHION, MICROPHONE	
6	*3-329-435-01	RETAINER, SHAFT, TUNING		30	9-911-840-XX	SPACER (D)	
7	3-329-403-01	SHAFT, TUNING		31	3-318-203-71	SCREW (B1.7X5), TAPPING	
8	3-329-410-01	WASHER, STOPPER		32	*3-329-426-01	GEAR, DRUM	
9	3-545-659-00	CUSHION, SPEAKER		33	3-327-119-01	SPACER	
10	*3-329-419-01	BRACKET, ANT		34	3-329-423-01	KNOB, POWER SW	
11	7-627-553-27	SCREW, PRECISION +P 2X2.5		35	7-685-784-04	SCREW +PTT 2X8 (S)	
12	*3-329-416-01	PLATE, NUT		36	3-318-202-21	SCREW (M1.4X5), TAPPING	
13	7-627-850-07	SCREW, PRECISION +P 1.4X2		37	7-685-105-19	SCREW +P 2X8 TYPE2 NON-SLIT	
14	X-3329-450-1	(SILVER)...CABI REAR ASSY		38	3-333-313-01	(SILVER)...LID, BATTERY CASE	
	X-3329-450-2	(WHITE)...CABI REAR ASSY			3-333-313-11	(WHITE)...LID, BATTERY CASE	
	X-3329-450-3	(BLUE)...CABI REAR ASSY			3-333-313-21	(BLUE)...LID, BATTERY CASE	
	X-3329-450-4	(RED)...CABI REAR ASSY			3-333-313-31	(RED)...LID, BATTERY CASE	
15	X-3329-451-1	(SILVER)...CABI FRONT ASSY	17-21	39	3-333-305-01	STRIP, ORNAMENTAL	
	X-3329-451-2	(WHITE)...CABI FRONT ASSY	17-21	40	9-911-839-XX	SPACER	
	X-3329-451-3	(BLUE)...CABI FRONT ASSY	17-21	41	3-309-009-00	SPACER, MOTOR	
	X-3329-451-4	(RED)...CABI FRONT ASSY	17-21	501	A-3017-140-A	PC BOARD ASSY, A	
16	7-685-104-14	SCREW +P 2X6 TYPE2 NON-SLIT		502	A-3017-142-A	PC BOARD ASSY, D1	
17	3-564-973-00	SPRING (B)		503	A-3017-143-A	PC BOARD ASSY, D2	
18	3-329-431-01	BOARD, TERMINAL, BATTERY		504	1-463-649-11	TUNER UNIT (UHF/VHF) BT-838L-2	
19	3-329-412-01	TERMINAL, PLUS		505	1-526-736-00	SOCKET, CRT	
20	3-329-415-01	TERMINAL, MINUS		506	1-616-744-11	PC BOARD, (C) FLEXIBLE	
21	3-329-413-01	SPRING		ANT1	1-501-345-11	ANTENNA, FERRITE-ROD	
22	3-831-441-11	CUSHION (B)		CRT1	Δ.8-735-950-05	CRT 02JM(PS)	
23	3-527-213-00	LABEL, SERIAL NUMBER		L901	Δ.1-451-276-11	DEFLECTION YOKE	
24	3-332-211-11	KNOB, BAND SELECTION		SP901	1-503-540-11	SPEAKER	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF:μF, PF:μF.

RESISTORS

All resistors are in ohms.

F : nonflammable

COILS

MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:

UA...: μA..., UPA...: μPA..., UPC...: μPC,

UPD...: μPD...

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
501	A-3017-140-A	PC BOARD ASSY, A		
502	A-3017-142-A	PC BOARD ASSY, D1		
503	A-3017-143-A	PC BOARD ASSY, D2		
504	1-463-649-11	TUNER UNIT (UHF/VHF) BT-838L-2		
505	1-526-736-00	SOCKET, CRT		
506	1-616-744-11	PC BOARD, (C) FLEXIBLE		
ANT1	1-501-345-11	ANTENNA, FERRITE-ROD		
C151	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C152	1-124-224-00	ELECT 47MF	20%	6.3V
C153	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C154	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C156	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C157	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C158	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C159	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C160	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C202	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C203	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C204	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C205	1-131-415-00	TANTALUM 0.68MF	20%	16V
C206	1-124-257-00	ELECT 2.2MF	20%	50V
C207	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C208	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C209	1-124-635-00	ELECT 220MF	20%	6.3V
C212	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C215	1-124-635-00	ELECT 220MF	20%	6.3V
C216	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C217	1-123-612-00	ELECT 2.2MF	20%	50V
C218	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C219	1-163-103-00	CERAMIC CHIP 27PF	5%	50V
C220	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C221	1-123-612-00	ELECT 2.2MF	20%	50V
C301	1-124-245-00	ELECT 4.7MF	20%	25V
C302	1-124-461-11	ELECT 4.7MF	20%	16V
C303	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C304	1-124-233-00	ELECT 10MF	20%	6.3V
C401	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C404	1-124-224-00	ELECT 47MF	20%	6.3V
C405	1-163-036-00	CERAMIC CHIP 0.068MF		50V
C451	1-163-077-00	CERAMIC CHIP 0.1MF		50V
C452	1-124-233-00	ELECT 10MF	20%	6.3V
C453	1-124-444-00	ELECT 220MF	20%	6.3V
C501	1-130-481-00	MYLAR 0.0068MF	5%	50V
C502	1-124-413-00	ELECT 220MF	20%	4V
C503	1-131-375-00	TANTALUM 4.7MF	20%	6.3V
C504	1-163-209-00	CERAMIC CHIP 0.0015MF	5%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
C506	1-163-015-00	CERAMIC CHIP 0.0033MF	10%	50V
C507	1-163-129-00	CERAMIC CHIP 330PF	10%	50V
C508	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C509	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C510	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C511	1-127-498-00	ELECT(SOLID) 15MF	20%	10V
C512	1-124-430-00	ELECT 22MF	20%	4V
C513	1-131-375-00	TANTALUM 4.7MF	20%	6.3V
C514	1-131-346-00	TANTALUM 0.68MF	10%	35V
C515	1-124-257-00	ELECT 2.2MF	20%	50V
C516	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C551	1-124-222-00	ELECT 22MF	20%	6.3V
C552	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C553	1-124-461-11	ELECT 4.7MF	20%	16V
C554	1-163-033-00	CERAMIC CHIP 0.022MF		50V
C555	1-124-413-00	ELECT 220MF	20%	4V
C601	1-123-661-00	ELECT 100MF	20%	6.3V
C602	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C603	1-124-257-00	ELECT 2.2MF	20%	50V
C604	1-163-127-00	CERAMIC CHIP 270PF	5%	50V
C605	1-163-145-00	CERAMIC CHIP 0.0015MF	10%	50V
C606	1-124-261-00	ELECT 10MF	20%	50V
C607	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C608	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C609	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C610	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C611	1-124-635-00	ELECT 220MF	20%	6.3V
C612	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C613	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C801	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C802	1-124-255-00	ELECT 1MF	20%	50V
C803	1-106-363-00	MYLAR 0.0068MF	5%	200V
C804	1-127-508-00	ELECT(SOLID) 2.2MF	20%	25V
C805	1-102-038-00	CERAMIC 0.001MF	99%	500V
C806	1-162-146-00	CERAMIC 0.001MF		1KV
C807	1-163-036-00	CERAMIC CHIP 0.068MF		50V
C808	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C809	1-127-486-00	ELECT(SOLID) 47MF	20%	6.3V
C810	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C811	1-135-099-00	TANTAL. CHIP 2.2MF	10%	6.3V
C813	Δ.1-106-198-00	MYLAR 0.012MF	5%	100V
C851	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C852	1-131-415-00	TANTALUM 0.68MF	20%	16V
C853	1-124-234-00	ELECT 22MF	20%	16V
C854	1-124-445-00	ELECT 100MF	20%	16V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C855	1-124-257-00	ELECT	2.2MF	20%	35V
C856	1-124-261-00	ELECT	10MF	20%	50V
C857	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C858	1-162-147-00	CERAMIC	0.0022MF		1KV
C859	1-131-383-00	TANTALUM	10MF	20%	6.3V
CF201	1-409-370-00	TRAP, CERAMIC	4.5MHZ		
CF202	1-567-115-00	FILTER, CERAMIC			
CF203	1-567-513-11	FILTER, CERAMIC			
CRT1	△ 8-735-950-05	CRT 02JM (PS)			
D151	8-719-100-05	DIODE 1S2837			
D152	8-719-100-05	DIODE 1S2837			
D301	8-719-100-05	DIODE 1S2837			
D501	8-719-815-85	DIODE 1S1585			
D551	8-719-551-01	DIODE MA153			
D603	8-719-911-19	DIODE 1SS119			
D604	8-719-815-85	DIODE 1S1585			
D801	8-719-911-19	DIODE 1SS119			
D802	8-719-903-28	DIODE ESJA57-04			
D803	8-719-100-05	DIODE 1S2837			
D851	8-719-815-85	DIODE 1S1585			
D852	8-719-100-05	DIODE 1S2837			
D853	8-719-100-05	DIODE 1S2837			
D854	8-719-911-19	DIODE 1SS119			
IC201	8-759-602-99	IC CX20183			
IC451	8-759-700-50	IC NJM386M			
IC501	8-752-030-28	IC CX20157			
IC601	8-759-802-39	IC CX20159			
IC851	8-759-701-01	IC NJM2904M			
J451	1-563-315-11	JACK (EAR)			
JR151	1-216-295-00	METAL CHIP	0	5%	1/10W
JR152	1-216-295-00	METAL CHIP	0	5%	1/10W
JR201	1-216-296-00	METAL CHIP	0	5%	1/8W
JR301	1-216-295-00	METAL CHIP	0	5%	1/10W
JR302	1-216-296-00	METAL CHIP	0	5%	1/8W
JR455	1-216-295-00	METAL CHIP	0	5%	1/10W
JR501	1-216-296-00	METAL CHIP	0	5%	1/8W
JR801	1-216-295-00	METAL CHIP	0	5%	1/10W
JR802	1-216-295-00	METAL CHIP	0	5%	1/10W
JR803	1-216-295-00	METAL CHIP	0	5%	1/10W
L201	1-408-098-00	MICRO INDUCTOR 560UH			
L202	*1-422-240-11	COIL, AIR-CORE			
L203	1-404-633-11	COIL, VIF DETECTOR			
L801	1-421-549-00	COIL, CHOKE 28UH			
L901	△ 1-451-276-11	DEFLECTION YOKE			
Q151	8-729-100-76	TRANSISTOR 2SA812			
Q153	8-729-900-52	TRANSISTOR DTC114YK			
Q201	8-729-200-87	TRANSISTOR 2SC2714-Y			
Q301	8-729-100-76	TRANSISTOR 2SA812			
Q302	8-729-100-66	TRANSISTOR 2SC1623			
Q401	8-729-100-66	TRANSISTOR 2SC1623			
Q402	8-729-900-52	TRANSISTOR DTC114YK			
Q551	8-729-800-36	TRANSISTOR 2SD1048			
Q552	8-729-800-36	TRANSISTOR 2SD1048			
Q553	8-729-800-68	TRANSISTOR 2SB815			
Q601	△ 8-729-177-23	TRANSISTOR 2SB772			
Q602	8-729-100-66	TRANSISTOR 2SC1623			
Q801	8-729-100-66	TRANSISTOR 2SC1623			

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q802	8-729-111-29	TRANSISTOR 2SD1616A-K			
Q803	8-729-111-29	TRANSISTOR 2SD1616A-K			
Q804	8-729-100-66	TRANSISTOR 2SC1623			
Q805	8-729-301-25	TRANSISTOR 2SD1368			
Q806	8-729-103-72	TRANSISTOR 2SD1005			
Q851	8-729-800-36	TRANSISTOR 2SD1048			
Q852	8-729-103-16	TRANSISTOR 2SC1622A			
R151	1-216-097-00	METAL CHIP	100K	5%	1/10W
R154	1-216-073-00	METAL CHIP	10K	5%	1/10W
R157	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R201	1-216-037-00	METAL CHIP	330	5%	1/10W
R202	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R203	1-216-041-00	METAL CHIP	470	5%	1/10W
R204	1-216-009-00	METAL CHIP	22	5%	1/10W
R205	1-216-049-00	METAL CHIP	1K	5%	1/10W
R206	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R207	1-216-035-00	METAL CHIP	270	5%	1/10W
R208	1-216-017-00	METAL CHIP	47	5%	1/10W
R211	1-216-049-00	METAL CHIP	1K	5%	1/10W
R212	1-216-037-00	METAL CHIP	330	5%	1/10W
R213	1-216-045-00	METAL CHIP	680	5%	1/10W
R214	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R215	1-216-075-00	METAL CHIP	12K	5%	1/10W
R216	1-216-073-00	METAL CHIP	10K	5%	1/10W
R217	1-216-023-00	METAL CHIP	82	5%	1/10W
R218	1-216-075-00	METAL CHIP	12K	5%	1/10W
R219	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R220	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R301	1-216-085-00	METAL CHIP	33K	5%	1/10W
R302	1-216-091-00	METAL CHIP	56K	5%	1/10W
R303	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R304	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R305	1-216-077-00	METAL CHIP	15K	5%	1/10W
R306	1-216-049-00	METAL CHIP	1K	5%	1/10W
R307	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R308	1-216-087-00	METAL CHIP	39K	5%	1/10W
R309	1-216-043-00	METAL CHIP	560	5%	1/10W
R401	1-216-083-00	METAL CHIP	27K	5%	1/10W
R402	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R403	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R406	1-216-121-00	METAL CHIP	1M	5%	1/10W
R407	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R451	1-216-045-00	METAL CHIP	680	5%	1/10W
R453	1-216-007-00	METAL CHIP	18	5%	1/10W
R454	1-216-007-00	METAL CHIP	18	5%	1/10W
R501	1-216-081-00	METAL CHIP	22K	5%	1/10W
R502	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R503	1-216-081-00	METAL CHIP	22K	5%	1/10W
R504	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R505	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R506	1-216-121-00	METAL CHIP	1M	5%	1/10W
R507	1-216-081-00	METAL CHIP	22K	5%	1/10W
R508	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R509	1-216-073-00	METAL CHIP	10K	5%	1/10W
R510	1-216-089-00	METAL CHIP	47K	5%	1/10W
R511	1-216-089-00	METAL CHIP	47K	5%	1/10W
R512	1-216-089-00	METAL CHIP	47K	5%	1/10W
R513	1-216-099-00	METAL CHIP	120K	5%	1/10W

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R514	1-216-105-00	METAL CHIP	220K	5%	1/10W
R515	1-216-025-00	METAL CHIP	100	5%	1/10W
R516	1-216-001-00	METAL CHIP	10	5%	1/10W
R517	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R551	1-216-049-00	METAL CHIP	1K	5%	1/10W
R552	1-216-045-00	METAL CHIP	680	5%	1/10W
R553	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R554	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R556	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R558	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R559	1-216-039-00	METAL CHIP	390	5%	1/10W
R560	1-216-089-00	METAL CHIP	47K	5%	1/10W
R561	1-216-041-00	METAL CHIP	470	5%	1/10W
R602	1-216-085-00	METAL CHIP	33K	5%	1/10W
R603	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R604	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R605	1-216-097-00	METAL CHIP	100K	5%	1/10W
R606	1-216-097-00	METAL CHIP	100K	5%	1/10W
R607	1-216-049-00	METAL CHIP	1K	5%	1/10W
R608	1-216-043-00	METAL CHIP	560	5%	1/10W
R609	1-216-073-00	METAL CHIP	10K	5%	1/10W
R610	△ 1-216-081-00	METAL CHIP	22K	5%	1/10W
R611	△ 1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R612	1-216-073-00	METAL CHIP	10K	5%	1/10W
R613	1-216-095-00	METAL CHIP	82K	5%	1/10W
R614	1-216-089-00	METAL CHIP	47K	5%	1/10W
R615	1-216-025-00	METAL CHIP	100	5%	1/10W
R616	1-216-097-00	METAL CHIP	100K	5%	1/10W
R801	1-216-041-00	METAL CHIP	470	5%	1/10W
R802	1-216-047-00	METAL CHIP	820	5%	1/10W
R803	1-247-879-00	CARBON	100K	5%	1/6W
R804	1-216-280-00	METAL CHIP	2.7M	5%	1/8W
R806	1-202-727-00	SOLID	4.7M	10%	1/2W
R807	1-216-041-00	METAL CHIP	470	5%	1/10W
R808	1-216-033-00	METAL CHIP	220	5%	1/10W
R809	1-216-125-00	METAL CHIP	1.5M	5%	1/10W
R810	1-216-286-00	METAL CHIP	4.7M	5%	1/8W
R811	1-216-286-00	METAL CHIP	4.7M	5%	1/8W
R851	1-216-077-00	METAL CHIP	15K	5%	1/10W
R852	1-216-097-00	METAL CHIP	100K	5%	1/10W
R853	1-216-085-00	METAL CHIP	33K	5%	1/10W
R854	1-216-049-00	METAL CHIP	1K	5%	1/10W
R855	1-216-079-00	METAL CHIP	18K	5%	1/10W
R856	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R858	1-216-031-00	METAL CHIP	180	5%	1/10W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R859	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R860	1-216-081-00	METAL CHIP	22K	5%	1/10W
R861	1-216-083-00	METAL CHIP	27K	5%	1/10W
R862	1-216-089-00	METAL CHIP	47K	5%	1/10W
R863	1-216-131-11	METAL CHIP	2.7M	5%	1/10W
R864	1-216-073-00	METAL CHIP	10K	5%	1/10W
R865	1-216-101-00	METAL CHIP	150K	5%	1/10W
R868	1-216-240-00	METAL CHIP	56K	5%	1/8W
R869	1-216-132-11	METAL CHIP	3M	5%	1/10W
R870	1-216-097-00	METAL CHIP	100K	5%	1/10W
R871	1-216-033-00	METAL CHIP	220	5%	1/10W
RV151	1-230-941-11	RES, VAR, CARBON (WITH SW)200K(TUNING)			
RV152	1-230-429-11	RES, ADJ, METAL GLAZE 220K			
RV153	1-230-429-11	RES, ADJ, METAL GLAZE 220K			
RV154	1-230-215-00	RES, ADJ, METAL GLAZE 100K (VOL)			
RV155	1-230-216-00	RES, ADJ, METAL GLAZE 47K			
RV201	1-230-937-11	RES, ADJ, METAL GLAZE 10K			
RV451	1-230-939-11	RES, VAR, CARBON 10K			
RV501	1-230-610-11	RES, ADJ, CARBON 5K			
RV502	1-230-429-11	RES, ADJ, METAL GLAZE 220K			
RV601△	1-230-610-11	RES, ADJ, CARBON 5K			
RV801	1-230-954-11	RES, ADJ (HIGH VOLTAGE) 4.7M			
RV803	1-228-999-00	RES, ADJ, CARBON 470K			
RV851	1-230-611-11	RES, ADJ, CARBON 100K			
RV852	1-230-608-11	RES, ADJ, CARBON 50K			
S151	1-570-377-11	SWITCH, SLIDE (BAND)			
S601	1-554-598-00	SWITCH, SLIDE (POWER)			
SP901	1-503-540-11	SPEAKER			
SWF201	1-404-635-11	SAWF (DIP TYPE)			
T601	1-410-352-11	MICRO INDUCTOR			
T801△	1-439-370-11	TRANSFORMER ASSY, FLYBACK			

ACCESSORY & PACKING MATERIAL

Part No.	Description
3-329-492-01	SHEET, PROTECTION
3-329-494-01	CARDBOARD
3-329-498-01	BLISTER
3-333-304-01	CUSHION, SPACER

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

FD-10A

SERVICE MANUAL

US Model

No. 2

SUPPLEMENT

File this Supplement with the Service Manual.

- D1 BOARD CHANGE
- WINSTON MODEL ADDITION
- NFL CABINET (FRONT) ADDITION

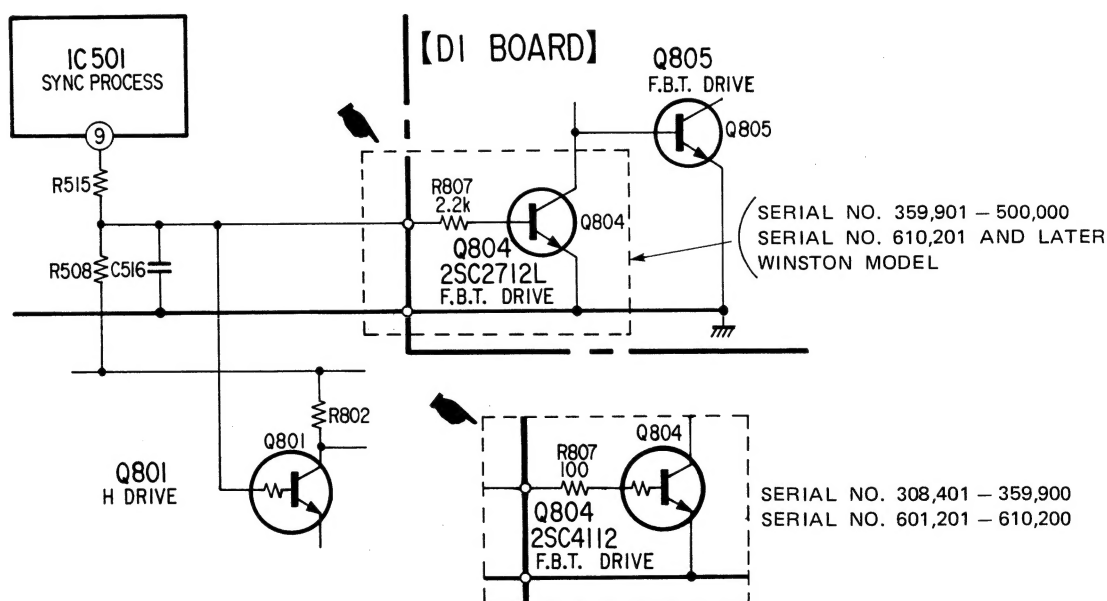
1. D1 Board change

D1 board of FD-10A new type (see supplement No. 1) has been changed. (Part number's suffix is 23.)

The mounting diagram and a part of schematic diagram for the new D1 board are given in this supplement.

SCHEMATIC DIAGRAM

 : changed portion

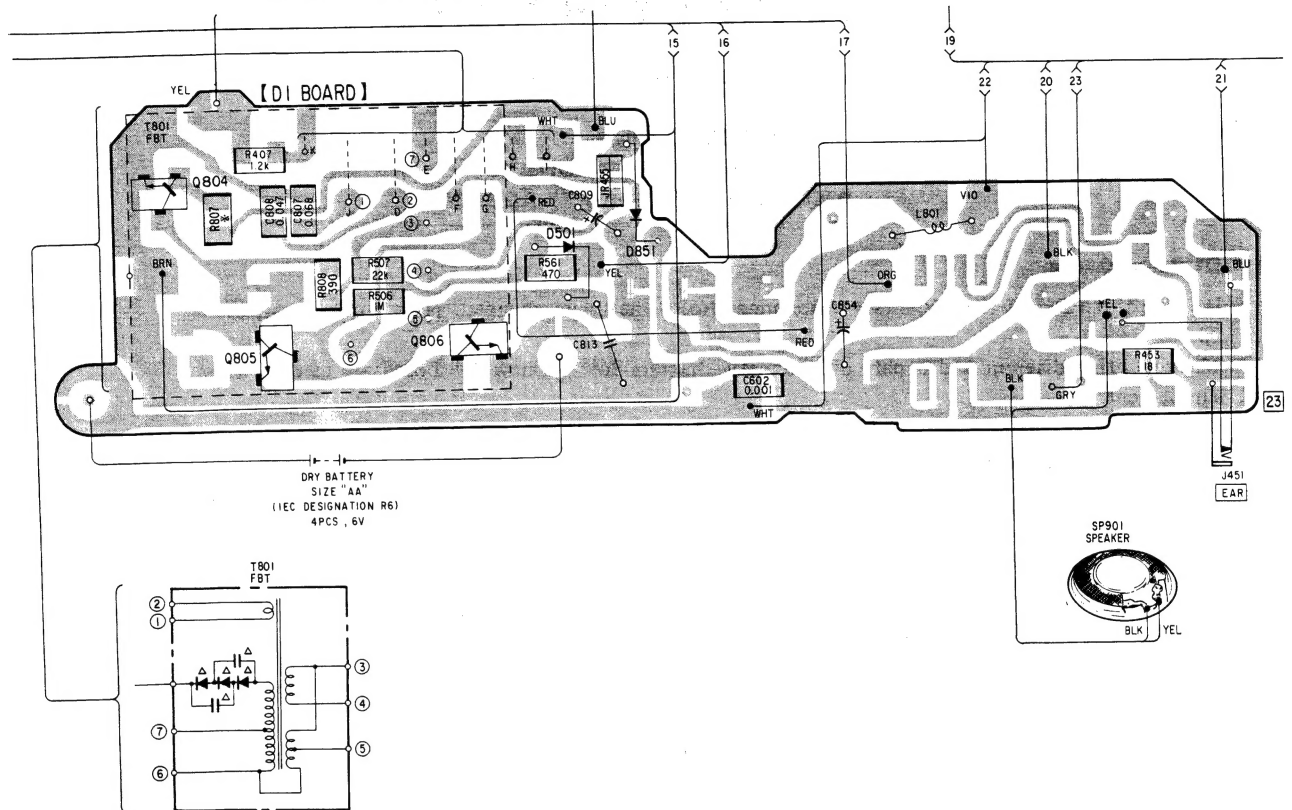


FLAT BLACK AND WHITE TV
SONY

B&W

MOUNTING DIAGRAM

* R807	100	{ SERIAL No. 308,401-359,900 SERIAL No. 601,201-610,200
	2.2k	{ SERIAL No. 359,901-500,000 SERIAL No. 610,201 AND LATER WINSTON MODEL



CHANGED PARTS (against the new type described in supplement No. 1)

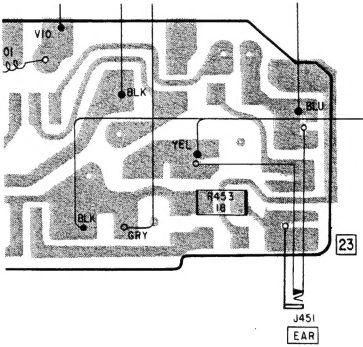
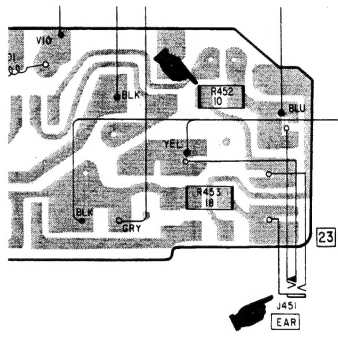
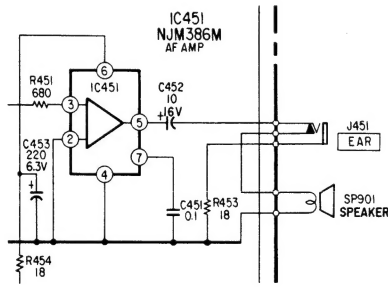
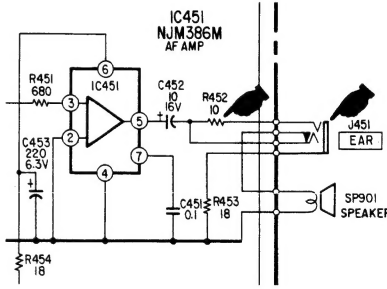
Ref. No.	Serial No.308,401 — 359,900 Serial No.601,201 — 610,200		Serial No.359,901 — 500,000 Serial No.610,201 and later WINSTON model			
	Part No.	Description	Remarks	Part No.	Description	Remarks
JR804	_____		DELETED	_____		_____
Q804	8-729-806-99	TRANSISTOR 2SC4112	_____	8-729-100-66	TRANSISTOR 2SC1623	CHANGED
R807	1-216-025-00	METAL CHIP 100Ω 5% 1/10W	ADDED	1-216-057-00	METAL CHIP 2.2KΩ 5% 1/10W	CHANGED

2. WINSTON model addition

WINSTON model is almost the same as FD-10A new type (refer to FD-10A supplement No. 1), but the type of headphone is different. (Stereo type: Output is monaural.) Part number suffix of D1 board is 23. (See DIAGRAMS of pages 1, 2)

● **Difference between FD-10A new type and FD-10A Winston model.**

👉 : Points of difference

	New Type	WINSTON Model
J451 (earphone jack) EAR	Monaural Type Color : black Part No. 1-563-315-11	Stereo Type (Output is monaural) Color : green Part No. 1-562-967-11
MOUNTING DIAGRAM (D1 Board)		
SCHEMATIC DIAGRAM		
ELECTRICAL PARTS	*A-3107-157-A PC BOARD ASSY, D1 506 R452	*A-3017-164-A PC BOARD ASSY, D1 1-216-001-00 RESISTOR, METAL CHIP 10Ω 5% 1/10W

3. NFL cabinet (front) addition

Cabinet with team names of NFL have been added.

No.	Part No.	Description
15	X-3329-479-1	CABINET (FRONT) ASSY, FOR CHICAGO BEARS
	X-3329-479-2	CABINET (FRONT) ASSY, FOR PHILADELPHIA EAGLES
	X-3329-479-3	CABINET (FRONT) ASSY, FOR LOS ANGELES RAIDERS
	X-3329-479-4	CABINET (FRONT) ASSY, FOR LOS ANGELES RAMS
	X-3329-479-5	CABINET (FRONT) ASSY, FOR NEW YORK GIANTS

